What is claimed is:

1. A position detection apparatus comprising:

a recording medium on which a position signal comprising a periodic signal is recorded;

a detection section comprising a first detection head which moves relative to said recording medium along the recording direction of said position signal for detecting said position signal, and a second detection head which is disposed apart from said first detection head by a predetermined distance in the recording direction of said position signal, and moves relative to said recording medium, operating together with said first detection head for detecting said position signal;

a polar conversion section for converting the position signal detected by said first detection head and said second detection head into an angle signal showing a relative position of said recording medium and said detection section in one period as an angle;

a low pass filter for removing high pass component in the angle signal output from said polar conversion section; and

an output section for outputting relative position information of said recording medium and said detection section, based on said angle signal in which the high pass component has been removed by said low pass filter.

2. A position detection apparatus according to claim 1, wherein said low pass filter has:

a frequency control oscillator for outputting a periodic signal in which the frequency is controlled based on a frequency control signal;

a phase comparator for comparing the phase of the angle signal output from said polar conversion section and the periodic signal output from said frequency control oscillator to thereby output a phase error;

an integrator for integrating the phase error output from said phase comparator to thereby output a velocity error; and

an adder for adding the velocity error output from said integrator and the phase error output from said phase comparator to thereby generate said frequency control signal,

wherein said frequency control oscillator controls the frequency of said periodic signal so that said phase error is zero based on said frequency control signal, and outputs the periodic signal as the angle signal in which the high pass component has been removed.

3. A position detection apparatus according to claim 2, wherein said low pass filter has:

first increase and decrease means for increasing or decreasing the phase error output from said phase comparator; and

a second increase and decrease means for increasing or decreasing the phase error output from said first increase and decrease means;

wherein said integrator integrates the phase error increased or decreased by the

second increase and decrease means; and

said adder adds the velocity error output from said integrator and the phase error output from said increase and decrease means.

4. A position detection apparatus according to claim 2, further comprising a prediction section having an adder which adds the velocity error output from an integrator in said low pass filter and said angle signal output from said frequency control oscillator,

wherein said output section outputs relative position information of said recording medium and said detection section, based on the signal output from said prediction section.

5. A position detection apparatus according to claim 4, wherein said prediction section has third increase and decrease means for increasing or decreasing the velocity error output from the integrator in said low pass filter;

wherein said adder adds said angle signal output from said frequency control oscillator and the velocity error output from said third increase and decrease means.

6. A position detection apparatus according to claim 2, wherein said frequency control oscillator in said low pass filter designates an initial output value as an angle signal to be input from said polar conversion section to said phase comparator.

7. A position detection apparatus according to claim 2, wherein said polar conversion section generates an amplitude signal together with the angle signal, and comprises:

a noise detection section for detecting internal noise based on said amplitude signal and/or said phase error.

8. A position detection apparatus according to claim 2, further comprising:

a gain control section for controlling a gain of the phase error output from said phase comparator.

9. A position detection apparatus according to claim 8, wherein said gain control section controls the gain of the phase error output from said phase comparator, depending on the size of the phase error and/or the frequency of the phase error.

10. A position detection apparatus according to claim 8, wherein said polar conversion section generates an amplitude signal together with the angle signal, and comprises:

a noise detection section for detecting inside noise based on said amplitude signal and/or said phase error,

wherein said gain control section decreases the gain of the phase error output from said phase comparator, when external noise occurs, or said noise detection section detects noise.

11. A position detection apparatus according to claim 10, wherein said gain control section temporarily decreases said gain.

12. A position detection apparatus according to claim 8, wherein said gain control section decreases the gain of said phase error, when an absolute value of the phase error output from said phase comparator increases, exceeding a certain level.

13. A position detection apparatus according to claim 12, wherein said gain control section decreases the gain of said phase error, when a condition that the absolute value of the phase error output from said phase comparator increases, exceeding a certain level, continues for a predetermined time.

14. A position detection apparatus according to claim 1, wherein said polar conversion section designates a position signal detected by the first detection head and the second detection head as an address, and uses a table wherein said angle signal corresponding to the address is stored, to thereby generate an angle signal showing a relative position of said recording medium and said detection section in one period as an angle.

15. A position detection apparatus according to claim 14, wherein said address and/or said angle signal are Gray coded.

16. An arithmetic processing unit comprising:

a polar conversion section for respectively converting a first periodic signal and a second periodic signal whose phase is different from that of said first periodic signal into an angle signal showing an angle in one period of said first periodic signal and said second periodic signal;

a low pass filter for removing a high pass component in said angle signal output from said polar conversion section; and

an output section for outputting position information shown by said first periodic signal and said second periodic signal, based on said angle signal wherein the

high pass component has been removed by said low pass filter.

17. An arithmetic processing unit according to claim 16, wherein said low pass filter has:

a frequency control oscillator for outputting a periodic signal in which the frequency is controlled based on a frequency control signal;

a phase comparator for comparing the phase of the angle signal output from said polar conversion section and the periodic signal output from said frequency control oscillator to thereby output a phase error;

an integrator for integrating the phase error output from said phase comparator to thereby output a velocity error; and

an adder for adding the velocity error output from said integrator and the phase error output from said phase comparator to thereby generate said frequency control signal,

wherein said frequency control oscillator controls the frequency of said periodic signal so that said phase error is zero based on said frequency control signal, and outputs the periodic signal as the angle signal in which the high pass component has been removed.